REMARKS

INTRODUCTION

In accordance with the foregoing, claims 1, 5, 11, 17, 22, 28, 30 and 32 have been amended. No new matter is being presented, and approval and entry are respectfully requested. Therefore, claims 1-36 are pending and reconsideration is respectfully requested.

ENTRY OF RESPONSE UNDER 37 C.F.R. §1.116

Applicants request entry of this Rule 116 Response and Request for Reconsideration because it is believed that the amendment of claims1, 5, 11, 17, 22, 28, 30 and 32 puts this application into condition for allowance as suggested by the Examiner, the amendment should not entail any further search by the Examiner since no new features are being added or no new issues are being raised, and the amendment do not significantly alter the scope of the claims and place the application at least into a better form for appeal.

The Manual of Patent Examining Procedures sets forth in §714.12 that "any amendment that would place the case either in condition for allowance or in better form for appeal may be entered." Moreover, §714.13 sets forth that "the Proposed Amendment should be given sufficient consideration to determine whether the claims are in condition for allowance and/or whether the issues on appeal are simplified."

REJECTION OF CLAIMS 1-36 UNDER 35 U.S.C. §112(2)

On page 2, numbered paragraph 1 of the Office action, the Examiner rejected claims 1-36 under 35 U.S.C. §112, second paragraph. The rejected claims have been amended to remove the alternative language according to the Examiner's suggestions on page 2, numbered paragraph 2 of the Office action. In light of the foregoing claim amendments, Applicants respectfully request that the rejection is overcome.

REJECTION OF CLAIMS 1, 2 AND 4 UNDER 35 U.S.C. §102(b) AS BEING ANTICIPATED BY SHETH ET AL.

On page 2, numbered paragraph 4 of the Office action, the Examiner rejected claims 1, 2 and 4 under 35 U.S.C. §102(b) as anticipated by Sheth et al. "An Adaptive Control Methodology for the Injection Molding Process. Part 1: Material Data Generation" (hereinafter, "Sheth").

The reference relied upon by the Examiner, Sheth, relates to basic data gathering procedures for an adaptive injection molding control in which melt temperature variations are compensated for. As such, Sheth discusses a pressure-volume-temperature (PVT) testing procedure to determine basic data on a material being molded. Accordingly, tests on the molding material are run at varying hydraulic pressures over a range of melting temperatures to determine specific volumes of the material. See Sheth, page 92, middle of left column.

Claim 1 of the present application, in part, recites: "A resin evaluation method of an injection molding machine comprising: ... performing injections of resin using the injection molding machine on the set analysis conditions; ..."

Sheth does not teach or suggest at least "performing injections of resin using the injection molding machine on the set analysis conditions," wherein the set analysis conditions include "an injection velocity and a resin temperature," as recited in claim 1 of the present application. Instead, Sheth discloses a pressure-volume-temperature testing procedure wherein the pressure-volume-temperature data is obtained for resin that is in a still state (**static resin**), as shown in Table 5. See Sheth, page 92, Table 5. In contrast, the relationship of the set analysis conditions of injection velocity (pressure) and resin temperature (temperature) disclosed in claim 1 of the present application are in an injecting state (**dynamic state**) of the resin. Therefore, the relationships of the pressure-volume-temperature factors obtained in different states of resin (static versus dynamic) are not comparable.

Importantly, Sheth does not discuss at least obtaining a degree of resin-temperature dependency of a resin pressure and a degree of velocity or flow-rate dependency of a resin pressure, based on either a relationship between the resin pressure and a screw position or a relationship between the resin pressure and an elapsing time from a start of each of said injections of resin, as recited in claim 1. Nevertheless, the Examiner asserts in the Office action that the shot size values are obtained "so as to correct for different amounts of material remaining in the nozzle after the shot." Accordingly, the Examiner purports that, because different shot sizes require a different screw position, the obtained degree of resin-temperature dependency of a resin pressure is based is on a relationship between the resin pressure and a screw position.

Applicants respectfully assert that none of the Examiner's asserted reasoning discussed above is found in Sheth. Instead, it appears as though such reasoning is conjecture on the part of the Examiner. Therefore, the anticipation rejection is improper and Applicants respectfully request that the rejection be withdrawn.

Applicants respectfully assert, however, that even if volume values at different shot sizes in the pressure-volume-temperature data in Table 5 of Sheth does require different screw positions, as the Examiner asserts in the Office action, the relationship between the resin pressure and the resin temperature excluding the resin volume as a variable is never disclosed or made obvious from the PVT data shown in Table 5. Further, since the pressure-volume-temperature data does not include the injection velocity or resin flow rate, it is impossible to obtain a degree of velocity or flow-rate dependency of the resin pressure based on the pressure-volume-temperature data.

Further, Sheth discloses that two shot sizes are used to eliminate the effect of material remaining in the nozzle so as to correct for leakage. Therefore, Applicants respectfully assert that Sheth does not teach or suggest at least obtaining a degree of resin-temperature dependency of a resin pressure and velocity or flow-rate dependency of a resin pressure based on either a relationship between the resin pressure and a screw position or a relationship between the resin pressure and an elapsing time from a start of each of said injections of resin

Regarding the rejections of claims 2 and 4, these claims are dependent on claim 1 and include all of the features of these claims plus additional features that patentably distinguish over the reference relied upon by the Examiner. For example, claim 2 recites: "the resin pressure is detected by a pressure sensor for detecting resin pressure at a nozzle of the injection molding machine or a pressure sensor for detecting resin pressure applied to the screw." Sheth does not teach or suggest at least this feature. Therefore, it is respectfully submitted that claims 2 and 4 patentably distinguish over the reference relied upon by the Examiner.

REJECTION OF CLAIMS 1-36 UNDER 35 U.S.C. §102(b) AS BEING ANTICIPATED BY KAMIGUCHI ET AL.

On page 3, numbered paragraph 6 of the Office action, the Examiner rejected claims 1-36 under 35 U.S.C. §102(b) as anticipated by Kamiguchi et al. (EP 1,044,781) (hereinafter "Kamiguchi"). This rejection is traversed and reconsideration is requested.

The reference relied upon by the Examiner, Kamiguchi, relates to a method of obtaining an injection pressure curve as a molding condition using a resin flow analysis. According to the method, a resin pressure curve and an injection pressure curve are each obtained. From the injection pressure curve and the resin pressure curve, an injection pressure command curve to serve as a molding condition in mass production, is obtained. See Kamiguchi, in the abstract.

Similarly, as previously discussed with respect to claim 1, independent claims 1, 5, 11, 17, 22, and 28, each disclose the relationship between the resin pressure and the resin temperature, excluding the resin volume as a variable, as variables for evaluating a resin condition.

Independent claim 5 of the present application, in part, recites: "A resin evaluation method of an injection molding machine comprising: setting analysis conditions including an injection velocity and a resin temperature; performing injections of resin using the injection molding machine on the set analysis conditions; ..."

Independent claim 11 of the present application, in part, recites: "A resin evaluation method for an injection molding machine comprising: ... obtaining data of the injection pressure, the injection velocity and the resin temperature in each of the injections; and automatically obtaining an interdependency relation of the resin pressure with respect to the resin temperature and the injection velocity or flow rate of resin based on combinations of the data of the injection pressure, the injection velocity and the resin temperature in the injections."

Independent claim 17 of the present application, in part, recites: "A resin evaluation device using an injection molding machine comprising: setting means for setting analysis conditions including an injection velocity and a resin temperature to evaluate characteristics of resin ..."

Independent claim 22 of the present application, in part, recites: "A resin evaluation device using an injection molding machine comprising: setting means for setting analysis conditions including an injection velocity and a resin temperature to evaluate characteristics of resin ..."

Independent claim 28 of the present application, in part, recites: " A resin evaluation device using an injection molding machine comprising: ... analyzing means for analyzing interdependency relation of the resin pressure with respect to the resin temperature and one of the injection velocity and a flow rate of resin based on data stored in said storing means."

Kamiguchi does not teach or suggest at least a relationship between the resin pressure and the resin temperature, excluding the resin volume as a variable, for evaluating a resin condition, as is disclosed in each of independent claims 1, 5, 11, 17, 22, and 28. Instead, Kamiguchi discloses obtaining a pressure-volume-temperature relationship as a function of time and fails to teach or suggest obtaining the relationship between the resin pressure and the resin temperature excluding the resin volume as a variable. Further, there is no disclosure in Kamiguchi that relates to the claimed obtaining or analyzing any of the above noted relationships and/or interrelationships.

Nevertheless, in the "Response to Arguments" section of the outstanding Office Action, the Examiner points to various citations in Kamiguchi for the purpose of trying to establish that the reference does in fact disclose the claimed invention. However, in each citation, Applicants respectfully note that the Examiner has either misstated the disclosure or attempted to derive conclusions from the disclosure. Thus, in both cases, Applicants respectfully assert that the anticipation rejections are either overcome or improper.

Therefore, for at least the foregoing reasons, each of independent claims 1, 5, 11, 17, 22, and 28, patentably distinguish over the reference relied upon the Examiner.

Claims 2-4, 6-10, 12-16, 18-21, 23-27, and 29-36, depend from the independent claims discussed above and patentably distinguish over the reference relied upon by the Examiner for at least the reasons discussed above. For example, claim 13 recites that "the injection pressure is detected at set positions or set points in time elapsing from a start of injection in each of the injections, and the data of the injection pressure, the injection velocity and the resin temperature are obtained in each of the injection."

REJECTION OF CLAIMS 1-36 UNDER 35 U.S.C. §102(b) AS BEING ANTICIPATED BY NUNN

In the Office Action, at page 3, numbered paragraph 7, claims 1-36 were rejected under 35 U.S.C. §102(b) as being clearly anticipated by Nunn (Pat. No. 4,850,217). This rejection is traversed and reconsideration is requested.

The reference relied upon by the Examiner, Nunn, relates to a method of obtaining pressure-volume-temperature (PVT) constants for a given material. According to Nunn, an injection molding machine to develop PVT constants for a given material by pressurizing the material in the barrel against the blocked outlet nozzle, measuring the volume during pressurization, and then weighing the pressurized shot after it is purged from the barrel in order to calculate the specific volume of the material. See Nunn, in the abstract.

As in the discussion above relating to Kamiguchi, Nunn does not teach or suggest at least a relationship between the resin pressure and the resin temperature, excluding the resin volume as a variable, for evaluating a resin condition, as is disclosed in each of independent claims 1, 5, 11, 17, 22, and 28 of the present application.

Instead, Nunn discloses obtaining a pressure-volume-temperature relationship as a function of time and fails to teach or suggest obtaining the relationship between the resin pressure and the resin temperature excluding the resin volume as a variable. Further, there is no disclosure in Nunn that relating to obtaining or analyzing any of the relationships or interrelationships between resin pressure, temperature, time, and nozzle position.

As with the rejection over Kamiguchi, however, in the "Response to Arguments" section of the outstanding Office Action, the Examiner points to various citations in Nunn for the purpose of trying to establish that the reference dose in fact disclose the claimed invention. However, in each citation, Applicants respectfully note that the Examiner has either misstated the disclosure or attempted to derive conclusions from the disclosure. Thus, in both cases, Applicants respectfully assert that the anticipation rejections are either overcome or improper.

Therefore, for at least the foregoing reasons, claims 1, 5, 11, 17, 22, and 28 patentably distinguish over Nunn. Thus, the rejections of these claims are believed to be overcome.

Claims 2-4, 6-10, 12-16, 18-21, 23-27, and 29-36, depend from the independent claims discussed above and patentably distinguish over the reference relied upon by the Examiner for at least the reasons discussed above. For example, claim 13 recites that "the injection pressure is detected at set positions or set points in time elapsing from a start of injection in each of the injections, and the data of the injection pressure, the injection velocity and the resin temperature are obtained in each of the injection."

CONCLUSION

In accordance with the foregoing, it is respectfully submitted that all outstanding objections and rejections have been overcome and/or rendered moot. And further, that all pending claims patentably distinguish over the prior art. Thus, there being no further outstanding objections or rejections, the application is submitted as being in condition for allowance which action is earnestly solicited.

If the Examiner has any remaining issues to be addressed, it is believed that prosecution can be expedited and possibly concluded by the Examiner contacting the undersigned attorney for a telephone interview to discuss any such remaining issues.

If there are any underpayments or overpayments of fees associated with the filing of this Amendment, please charge and/or credit the same to our Deposit Account No. 19-3935.

Respectfully submitted,

STAAS & HALSEY LLP

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